



Acumen Teach
To the point


Ratio & Proportion

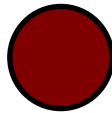
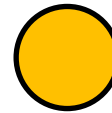
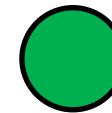
Master-box

Number—Logic—Mathematical knowledge application—Ratios—Proportion—Logical proofs



 1.5 hours

 36 Questions

Easy (12 Questions)	/12
Moderate(12 Questions)	/24
Difficult(12 Questions)	/36
Total Marks	/72
How did you do?	
  	



Easy Questions

1. Simplify the ratio 6 : 9.

Answer: 2 : 3

(1 marks)

2. Divide £20 in the ratio 2 : 3.

Answer: £8 and £12

(1 marks)

3. If $x : y = 3 : 4$ and $y = 12$, find x .

Answer: $x = 9$

(1 marks)



4. Write $15 : 25$ in its simplest form.

Answer: $3 : 5$

(1 marks)

5. If 5 pencils cost £1.50, what is the cost of 1 pencil?

Answer: £0.30

(1 marks)

6. If $a : b = 2 : 5$ and $b = 15$, find a .

Answer: $a = 6$

(1 marks)

7. Share £100 in the ratio $1 : 4$.

Answer: £20 and £80

(1 marks)

8. If 3 apples cost 90p, what is the cost of 5 apples?

Answer: £1.50

(1 marks)



9. Simplify $14 : 21$.

Answer: $2 : 3$

(1 marks)

10. If $2 : 3 = 8 : x$, find x .

Answer: $x = 12$

(1 marks)

11. Simplify $14 : 21$.

Answer: 4 cups

(1 marks)

12. Simplify $14 : 21$.

Answer: $x = 21$

(1 marks)



Moderate Questions

13. A map has a scale of 1 : 50,000. If two towns are 8 cm apart on the map, how far are they in real life (in km)?

Answer: 4 km

Working: $8 \times 50,000 = 400,000 \text{ cm} = 4 \text{ km}$

(2 marks)

14. A bag contains red and blue marbles in the ratio 5 : 3. If there are 24 blue marbles, how many red marbles are there?

Answer: 40 red marbles

Working: $\frac{5}{3} = \frac{x}{24}$, so $x = 40$

(2 marks)

15. A car travels 240 miles in 4 hours. What is its average speed in miles per hour?

Answer: 60 mph

Working: Speed = $\frac{240}{4} = 60 \text{ mph}$

(2 marks)

16. A rectangle has sides in the ratio 3 : 5. If the shorter side is 9 cm, what is the perimeter of the rectangle?

Answer: 48 cm

Working: Longer side = $\frac{5}{3} \times 9 = 15 \text{ cm}$. Perimeter = $2(9 + 15) = 48 \text{ cm}$

(2 marks)



17. A recipe requires flour and sugar in the ratio 7 : 4. If 35g of flour is used, how much sugar is needed?

Answer: 20g

Working: $\frac{7}{4} = \frac{35}{x}$, so $x = 20$

(2 marks)

18. A sum of money is shared in the ratio 2 : 3 : 5. If the smallest share is £40, what is the total amount of money?

Answer: £200

Working: $\frac{2}{10} = \frac{40}{x}$, so $x = 200$

(2 marks)

19. A car uses 12 litres of petrol to travel 144 km. How much petrol will it use to travel 240 km?

Answer: 20 litres

Working: $\frac{12}{144} = \frac{x}{240}$, so $x = 20$

(2 marks)

20. A school has a ratio of boys to girls of 4 : 5. If there are 180 girls, how many boys are there?

A school has a ratio of boys to girls of 4 : 5. If there are 180 girls, how many boys are there?

Answer: 144 boys

Working: $\frac{4}{5} = \frac{x}{180}$, so $x = 144$

(2 marks)

21. A bag contains sweets in the ratio 2 : 3 : 5. If there are 30 sweets in total, how many sweets are in the smallest group?

Answer: 6 sweets

Working: Smallest group = $\frac{2}{10} \times 30 = 6$

(2 marks)



22. A recipe requires butter and sugar in the ratio 3 : 2. If 60g of butter is used, how much sugar is needed?

Answer: 40g

Working: $\frac{3}{2} = \frac{60}{x}$, so $x = 40$

(2 marks)

23. A map scale is 1 : 25,000. If two villages are 6 cm apart on the map, how far are they in real life (in km)?

Answer: 1.5 km

Working: $6 \times 25,000 = 150,000 \text{ cm} = 1.5 \text{ km}$

(2 marks)

24. A car travels 300 km in 5 hours. What is its average speed in km/h?

Answer: 60 km/h

Working: Speed = $\frac{300}{5} = 60 \text{ km/h}$

(2 marks)



Difficult Questions

25. A bag contains red, blue, and green marbles in the ratio 3 : 4 : 5. If there are 60 marbles in total, how many marbles are there of each colour?

Answer: Red = 15, Blue = 20, Green = 25

Working:

- Total parts = $3 + 4 + 5 = 12$
- Red = $\frac{3}{12} \times 60 = 15$
- Blue = $\frac{4}{12} \times 60 = 20$
- Green = $\frac{5}{12} \times 60 = 25$

(3 marks)

26. A rectangle has sides in the ratio 4 : 7. If the perimeter is 66 cm, find the length and width of the rectangle.

Answer: Length = 21 cm, Width = 12 cm

Working:

- Let sides be $4x$ and $7x$.
- Perimeter = $2(4x + 7x) = 22x = 66$, so $x = 3$.
- Length = $7x = 21$ cm, Width = $4x = 12$ cm

(3 marks)

27. A recipe requires flour, sugar, and butter in the ratio 5 : 3 : 2. If 200g of flour is used, how much sugar and butter are needed?

Answer: Sugar = 120g, Butter = 80g

Working:

- $\frac{5}{3} = \frac{200}{x}$, so $x = 120$ (sugar)
- $\frac{5}{2} = \frac{200}{y}$, so $y = 80$ (butter)

(3 marks)



28. A sum of money is shared in the ratio 3 : 4 : 5. If the largest share is £75, what is the total amount of money?

Answer: £180

Working:

◦ Largest share = $\frac{5}{12} \times x = 75$, so $x = 180$

(3 marks)

29. A car travels 360 km in 4 hours. If it continues at the same speed, how long will it take to travel 540 km?

Answer: 6 hours

Working:

◦ Speed = $\frac{360}{4} = 90$ km/h

◦ Time = $\frac{540}{90} = 6$ hours

(3 marks)

30. A map scale is 1 : 50,000. If two towns are 12 cm apart on the map, how far are they in real life (in km)?

Answer: 6 km

Working: $12 \times 50,000 = 600,000$ cm = 6 km

(3 marks)

31. A bag contains sweets in the ratio 2 : 3 : 4. If there are 45 sweets in total, how many sweets are in the largest group?

Answer: 20 sweets

Working:

◦ Largest group = $\frac{4}{9} \times 45 = 20$

(3 marks)



32. A rectangle has sides in the ratio 5 : 8. If the area is 320 cm², find the length and width of the rectangle.

Answer: Length = 16 cm, Width = 10 cm

Working:

- Let sides be $5x$ and $8x$.
- Area = $5x \times 8x = 40x^2 = 320$, so $x = 2$.
- Length = $8x = 16$ cm, Width = $5x = 10$ cm

(3 marks)

33. A recipe requires flour, sugar, and butter in the ratio 4 : 3 : 2. If 120g of sugar is used, how much flour and butter are needed? **Answer:** Flour = 160g, Butter = 80g

Working:

- $\frac{4}{3} = \frac{x}{120}$, so $x = 160$ (flour)
- $\frac{2}{3} = \frac{y}{120}$, so $y = 80$ (butter)

(3 marks)

34. A sum of money is shared in the ratio 2 : 5 : 7. If the smallest share is £30, what is the total amount of money?

Answer: £210

Working:

- Smallest share = $\frac{2}{14} \times x = 30$, so $x = 210$

(3 marks)

35. A car travels 420 km in 6 hours. If it continues at the same speed, how far will it travel in 9 hours?

Answer: 630 km

Working:

- Speed = $\frac{420}{6} = 70$ km/h
- Distance = $70 \times 9 = 630$ km

(3 marks)

36. A map scale is 1 : 10,000. If two villages are 15 cm apart on the map, how far are they in real life (in km)?

Answer: 1.5 km

Working: $15 \times 10,000 = 150,000$ cm = 1.5 km

(2 marks)